

MEETING ABSTRACTS

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# Center for Interdisciplinary Research in Health (CIIS) National Meeting 2023

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The Center for Interdisciplinary Research in Health (CIIS) is the research center of the Universidade Católica Portuguesa (UCP) focused on health care. The Center is organized in five platforms, and distributed in four geographies across Portugal: Lisbon, Porto, Viseu and Sintra (Table 1). The center has currently 155 active researchers and attracted funds exceeding 10M€.

For the first time ever, CIIS has organized a National Event that included researchers from all platforms and disciplines, in a truly interdisciplinary and translational scientific event, counting 117 registered participants and 120 abstracts. The meeting took place at the Faculty of Medicine, in the Sintra campus, on the 31<sup>st</sup> March and 1<sup>st</sup> April 2023. The Scientific Committee of the CIIS National Meeting decided that the theme for the meeting is *Interdisciplinary Health Care*. Rather than clustering researchers by platform or discipline, we decided to create three working sessions that are inclusive to everyone and not restricting the presentations by discipline, being therefore, interdisciplinary. These are: 1 – *Translational Care*; 2 – *Clinical Care*; and 3 – *Community Care*.

The meeting was held in the presence of the Universidade Católica Portuguesa Rector Professor Isabel Capelo Gil, the Vice-Rector Professor Peter Hanenberg, the Director of the CIIS, Professor Marlene Barros, the Director of the Faculty of Medicine, Professor António Almeida and the guest speaker Professor Tomáš Zima, Charles University, Prague, Czech Republic, and hosted by the Deputy Director of the CIIS, Professor Paulo J. G. Bettencourt.

For two days, papers were presented by invited speakers within each session, and posters were presented by CIIS researchers and students, in a highly anticipated poster session. All abstracts were peer-reviewed. To bring further excitement to the poster session, the Meeting Scientific Committee selected the best poster from each platform to receive the Best Poster Award. Finally, the CIIS platform coordinators presented their plans and vision for the future.

Following the success of this meeting, the Scientific Committee of the National Meeting, decided to implement yearly meetings of the Center.

We would like to acknowledge all CIIS members, staff and students that accepted the challenge of participating in this event, presenting their most recent data, sharing their knowledge, and making this truly an interdisciplinary health care event.

We hope this meeting has contributed to share the latest scientific achievements of all members and promoted the beginning of new collaborations for the future, keeping in mind the main goal of improving health care with an interdisciplinary view, to ultimately improve quality of life, with humanity and spirituality at the center of all scientific quests.

## Acknowledgements

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**Table 1 Platforms of the Center for Interdisciplinary Research in Health**

Name	Location	Head
Neurosciences	Lisbon and Porto	Prof. Ana Mineiro
Nursing	Lisbon and Porto	Prof. Paulo Alves
CatólicaMed	Sintra	Prof. Paulo Bettencourt
SalivaTec	Viseu	Prof. Nuno Rosa
Precision Dental Medicine	Viseu	Prof. André Correia



two recent identified species of marine fungi, *Penicillium lusitanum* and *Aspergillus affinis*. *Candida* spp. and *Enterococcus faecalis* isolated from oral pathologies were included to evaluate the antimicrobial potential of the marine fungi by the disk diffusion assay. The cytotoxicity of the effective concentrations of the extract was tested using the Vero cell line (ECACC 88020401, African Green Monkey Kidney cells, GMK clone), according to the ISO 10993-5. The extracts of *P. lusitanum* and *A. affinis* were active against *C. albicans* and *E. faecalis*, respectively. *Penicillium lusitanum* active extracts are non-cytotoxic, in contrast to *A. affinis* extracts that showed high cytotoxic effects on Vero cells, for all concentrations tested. The results on the biological characterization of the *P. lusitanum* extract are promising and support the development of new disinfecting solutions that may be used during root canal therapy cleaning and shaping.

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#### P9

##### - Antimicrobial properties and bioactivity potential of smart nanoparticles for dental applications

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Tooth decay is one of the greatest causes of tooth loss in the world. This not only affects the patient's quality of life but also carries an economic burden associated with the need for multiple reinterventions. Endodontic treatment aims to preserve teeth by cleaning, disinfecting and filling/sealing the root canal. Despite the high success rate of endodontic treatment, failures do occur in a large number of cases. Several new biomaterials for dentistry have been developed, however their bioactivity is often misunderstood. Our work focuses on the biological characterization of novel bioactive glass nanoparticles, including the evaluation of their antimicrobial and biocompatibility properties. *Candida albicans* (ATCC 11225) and *Enterococcus faecalis* (ATCC 29212) were included to evaluate the antimicrobial potential by the drop plate method [1]. The cytotoxicity was tested using the MC3T3-E1 cell line, through the resazurin reduction assay. The novel bioactive glass nanoparticles demonstrated antimicrobial activity against *C. albicans* and *E. faecalis*, being able to inhibit their growth but also, in some incubation times, decreased the survival of these microorganisms. After 24 h of incubation of MC3T3-E1 osteoblast cells with bioactive glass nanoparticles conditioned medium, around 48% cell viability was achieved. These novel bioactive glass nanoparticles have shown promising properties which may find applications on different areas of clinical dentistry.

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#### P10

##### - Should thermoplastic resins be used in removable dentures?

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#### Background

Removable dentures are the most popular rehabilitation treatment for edentulous patients. However, due to the presence of retentive elements and metallic structures in the aesthetic areas, several patients have reported both aesthetic and psychological problems. In addition, this type of dentures has low ductility and, therefore, low resistance to fracture. These limitations favored the development of flexible resins for use in conventional oral rehabilitation, which provide greater comfort and aesthetics for the patient.[1-3]

The aim of this investigation is to evaluate if the fabrication of denture bases with thermoplastic flexible resins provides superior mechanical and physical results in comparison with conventional acrylic resin (polymethylmethacrylate).

#### Materials and methods

After registering the research protocol in PROSPERO, the same was conducted using the PubMed/Medline®, Cochrane® Library, Web of Science® and Scopus® databases, where a combination of MeSH and free text terms were combined with Boolean operators AND and OR. The selection of articles was carried out by two independent investigators, according to the PRISMA flowchart, and the agreement was evaluated by Cohen's kappa coefficient, being later analyzed, and evaluated according to the established inclusion and exclusion criteria.

#### Results

In the 10 analyzed studies in this systematic review, 431 specimens were evaluated, being 310 of flexible thermoplastic resin and 121 of conventional acrylic resin. The studies included are in vitro and compare the mechanical properties and physical characteristics between the different types of resin. The production of removable prosthetic bases in flexible thermoplastic resin presents excellent mechanical results, but combined with poor physical characteristics, may not present superior long-term results, compared to conventional acrylic resin.

#### Conclusions

Given the results obtained, the option for these materials may not yet be an alternative to polymethylmethacrylate. More research is needed to optimize and validate these materials for intra-oral use.

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